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**Redescription of *Gnathia sugashimaensis* Nunomura
(Crustacea: Isopoda) from Japan**

By

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With Text-figures 1-4

Abstract *Gnathia sugashimaensis* Nunomura, 1981, originally described from the Pacific coast of Japan is fully redescribed based upon four males collected in the Inland Sea of Japan.

A sample of marine isopods collected in Bisan Seto, the Inland Sea of Japan, was forwarded to me by Dr. K. Sakai for identification. The sample contained four males of *Gnathia sugashimaensis* Nunomura, 1981, which was originally described from the Pacific coast of Japan based upon a single male and two Præniza-larvae perhaps belonging to this species. As the original description of this species did not show important features in detail, a critical redescription has been required. In the present paper I redescribe this species based upon the above-mentioned, new material from the Inland Sea of Japan. The morphology of the holotype of *G. lucanoides* (Monod, 1926) will be additionally dealt with in order to demonstrate some specific characteristics of *G. sugashimaensis* that were formerly unclear.

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***Gnathia sugashimaensis* Nunomura, 1981**

Material examined. 4 males (SMF 17339), south coast of Hitsushiji-jima, the Inland Sea of Japan, 1-50 m deep, July 1979, leg. Shin Nihon-Kisho-Kaiyo Co. Ltd., Osaka.

Description of mature males. Total length 3.5-5.0 mm. Cephalon 1.4 times as wide as long, dorsally with numerous, minute depressions, medially excavated; front of cephalon somewhat variable (Fig. 1A-C), with two, apically rounded, superior frontolateral processes bearing 3-6 short, simple setae at their tips. Lateral eyes well pigmented, ocelli small. Pereonite I lacking free lateral margins, without setae and with minute depressions dorsally; pereonites II-VII subequal in length, pereonite VI longest; second and third pereonites with minute depressions; pereonite

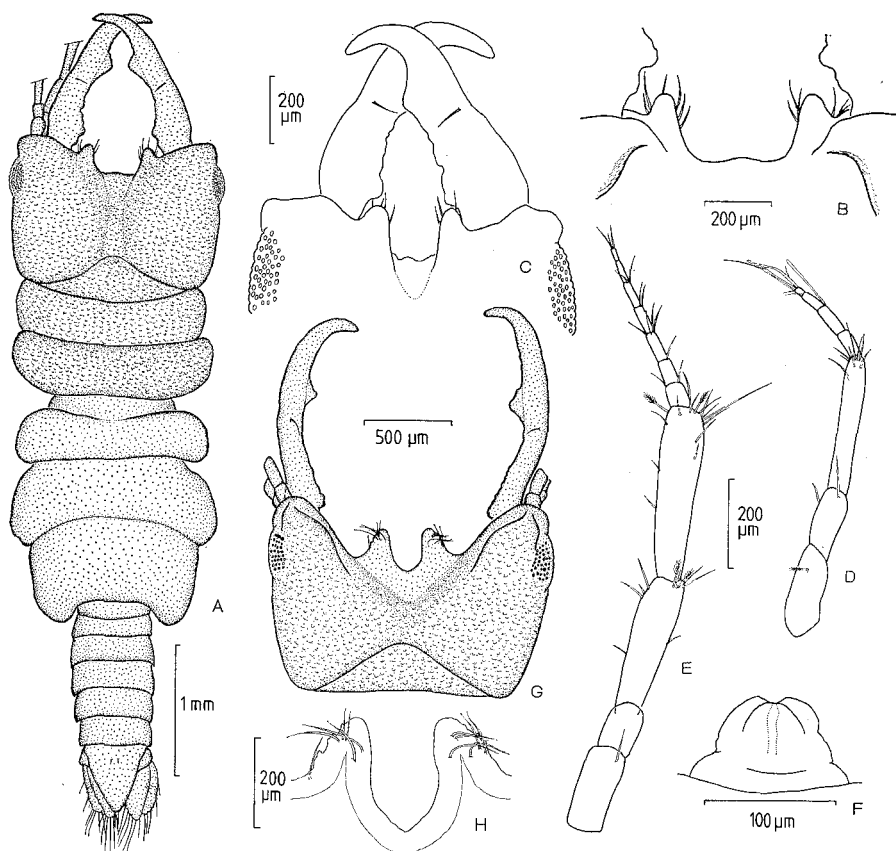


Fig. 1. A-F, *Gnathia sugashimaensis* Nunomura from the Inland Sea of Japan (figures based on a single adult male except for C, that based on a separate male). A. Habitus, dorsal; B. Front of cephalon, ventral; C. Front of cephalon with mandibles; D. Antenna I; E. Antenna II; F. Penis. G-H, *Gnathia lucanoides* (Monod), holotype male. G. Cephalon and pereonite I, dorsal; H. Superior frontolateral projections of cephalon, dorsal.

VII very short, hidden beneath posterior margin of pereonite VI, without setae; all pereonites well defined. Pleonites subequal in length. Telson triangular, 1.2 times as long as wide, its lateral margins smooth, slightly sinuous (Fig. 4 C).

Antenna I: peduncle 3-segmented, third segment longest; flagellum of four articles, its terminal article shortest, three distal articles with aesthetasc (Fig. 1 D). Antenna II: peduncle 4-segmented, second segment shortest, fourth longest, slightly longer than the third; flagellum of seven articles (Fig. 1 E). Mandible long and robust, mandibular blade with triangular projection in distal half and short simple seta at inner dorsal margin (Fig. 1 A, C). A stiletto-like second maxilla as shown by Nunomura (1981, p. 21, Fig. 2 C) was not found in the specimens examined here. Maxilliped of five segments; basal segment broadest, with narrow lobe of irregular shape at inner distal corner; four distal segments bearing finely fringed setae; terminal segment smallest, additionally with three short, simple setae at its tip (Fig. 2 A). Pylopod of three segments; broad basal segment bearing finely fringed setae

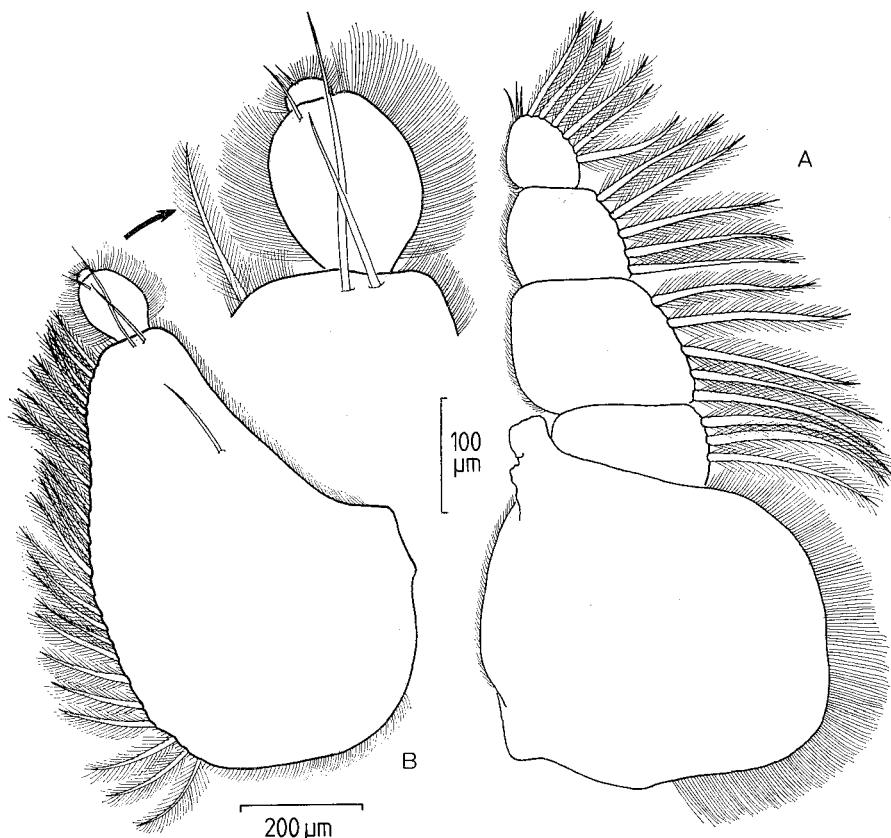


Fig. 2. *Gnathia sugashimaensis* Nunomura from the Inland Sea of Japan, adult male. A. Maxilliped; B. Pylopod.

at convex medial margin, its ventral surface with a long simple seta near outer margin and two long simple setae near its tip; penultimate segment small, oval with short simple setae near its tip; terminal segment minute, with very short simple seta at its tip (Fig. 2B). Pereopods robust; especially merus and ischium of pereopods II-V ventrally with short blunt teeth. Propodus and carpus of all pereopods and merus of pereopod V with fringed and denticulate spines of variable shape (Figs 3 and 4A, B). Penis very small, broader than long (Fig. 1F). Uropodal exopod narrower than uropodal endopod, subequal in length to the latter; both rami with elongate, simple and fringed setae; uropodal endopod dorsally with four feathered sensory setae (Fig. 4C).

Remarks. Nunomura (1981) discussed the taxonomic status of his new species, *Gnathia sugashimaensis*, in relation only to *G. pilosipes* Monod, 1926, which was described from Thailand and markedly differs from the former in the shape of the mandible. However, *G. sugashimaensis* appears to be more closely related to *G. lucanoides* (Monod, 1926) in major characters such as the shape of the cephalic frontolateral

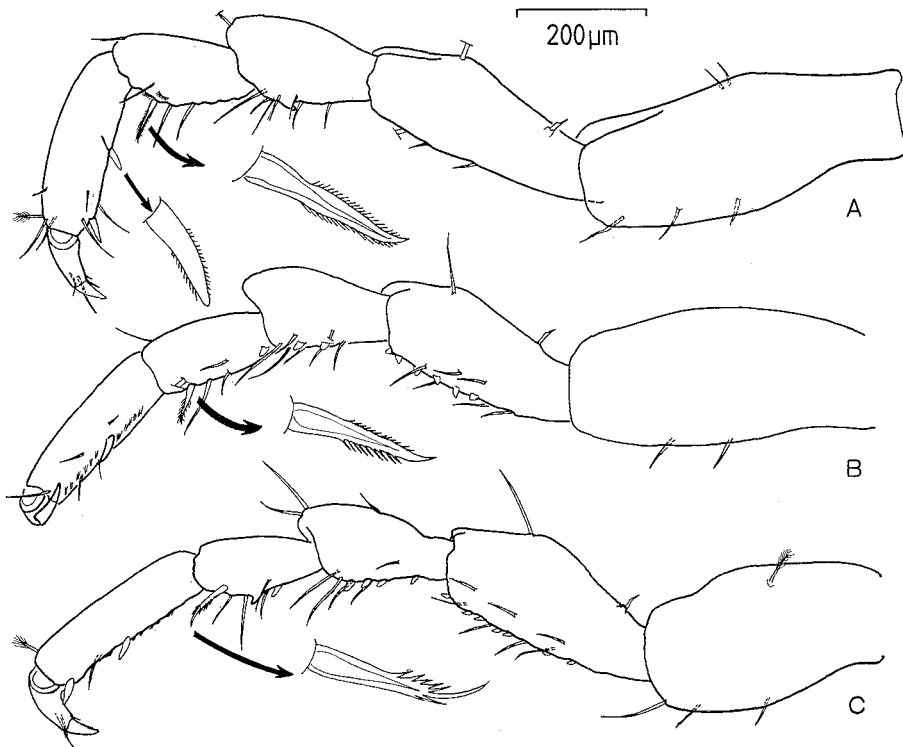


Fig. 3. *Gnathia sugashimaensis* Nunomura from the Inland Sea of Japan, adult male. A. Pereopod I; B. Pereopod II; C. Pereopod III.

processes, mandibles and pereopods.

The original description of *G. sugashimaensis* did not depict the detailed morphology of the cephalon, although it appears similar to that of *G. lucanoides* to certain extent. I provide here two illustrations of the cephalon of *G. lucanoides* based upon its holotype (Fig. 1G, H). There is little doubt that the dorsoposterior contour of the cephalon illustrated by Nunomura (1981) does not represent its actual shape. He seems to have misconceived of the pereonite I as a portion of the cephalon, the posterior edge of which should be markedly concave, though it is illustrated by him as a flat rim. The actual shape of the posterior portion of the cephalon would be similar to that of *G. lucanoides* (Fig. 1G). The cephalon in *G. lucanoides* appears more strongly excavated mid-dorsally than the counterpart in *G. sugashimaensis*. Furthermore, the paired, superior frontolateral processes in the former are placed close to each other, while the counterparts in the latter are widely separated from each other. Although Nunomura (1981) did not pay attention to this feature, his illustration of the total view of the holotype body shows this. The present specimens of *G. sugashimaensis* from the Inland Sea of Japan exhibit a variability in the setal armature of the superior frontolateral processes; each bearing 3–6 short, simple setae apically. On the other hand, the frontolateral processes of the holotype of *G. lucanoides* bear

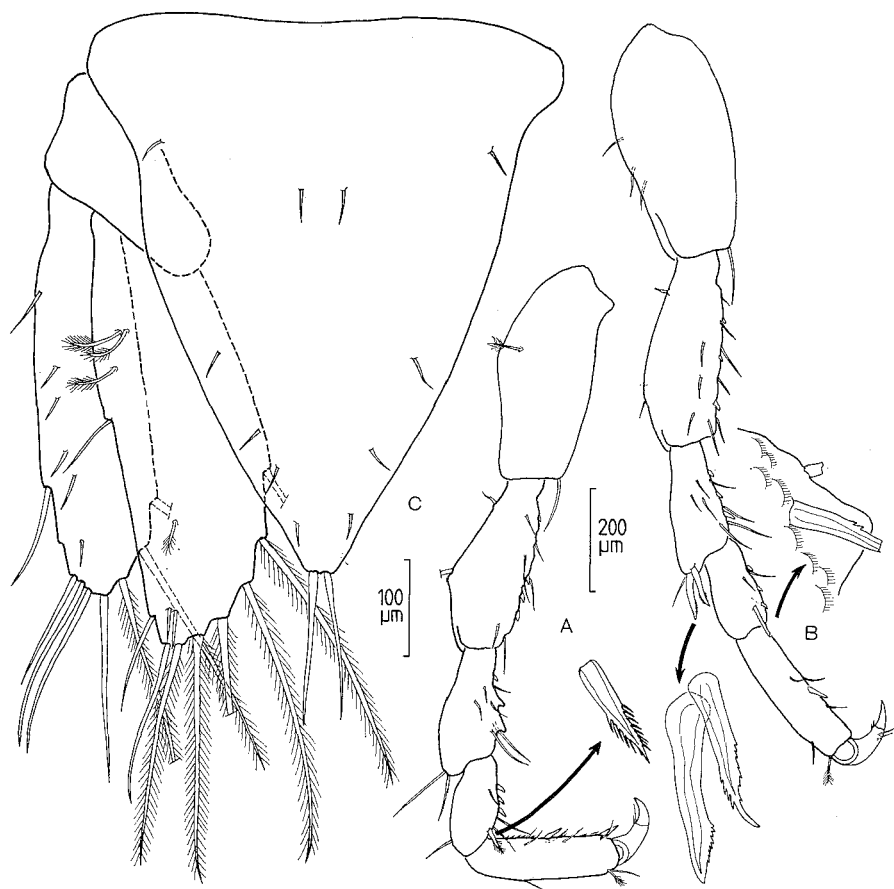


Fig. 4. *Gnathia sugashimaensis* Nunomura from the Inland Sea of Japan, adult male. A. Pereopod IV; Pereopod V; Telson with uropods.

one short, simple seta on the ventral margin and 5–6 simple setae on the dorsal surface.

The mandible of *G. sugashimaensis* is similar to that of *G. lucanoides*, while the mandible of the former is robuster than the counterpart of the latter. The antenna I of the holotype of *G. sugashimaensis* is described and illustrated by Nunomura (1981) as being composed of six segments. In contrast, the counterpart of the present specimens consists of seven segments without exception.

In the general appearance of the body *G. sugashimaensis* also resembles *G. monodi* Gurjanova, 1936a, described from the western North Pacific near Japan. *G. monodi* is known to have two pairs of superior, frontolateral processces on the cephalon (Gurjanova, 1936a, 1936b), and is easily discernible from *G. sugashimaensis*.

References

- Gurjanova, E. 1936a. Beiträge zur Kenntnis der Isopodenfauna des Pazifischen Ozeans. IV. Neue

- Isopodenarten aus dem Japanischen und Bering Meer. Zool. Anz., 114: 250-265.
- Gurjanova, E. 1936b. Crustacees. Isopodes des mers orientales. Faune U.R.S.S., 7(3): 1-278.
(In Russian)
- Monod, T. 1926. Les Gnathiidae, essai monographique (morphologie, biologie, systematique). Mem. Soc. Sci. Nat. Maroc., 13: 1-667, pl. 1.
- Nunomura, N. 1981. *Gnathia sugashimaensis*, a new gnathiid isopod from Sugashima, Ise Bay, central Japan. Bull. Toyama Sci. Mus., 3: 19-24.
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